Chapter 1

INTRODUCTION

1.1. Why this Book?

From an eighteenth-century sheikdom, since the mid-1960s, Abu Dhabi is already a striking example of rapid change surpassing Kuwait's exemplary growth rate by three times. It is widely regarded as a "rags to riches" case (El Mallakh, 1970, p. 135 and *ibid*., 1981). One book, entitled From Rags to Riches (Al-Fahim, 1998) explores the city's growth.[1] It was claimed then that Abu Dhabi boasts the world's highest per capita income with Kuwait and the US at second and third place, respectively. Abu Dhabi more or less share the top spot with Qatar now.

There is no guarantee either of everlasting economic growth as quantitatively measured by gross domestic product (GDP) or qualitatively as economic development in terms of standards of living. Beset with piracy and tribal warfare, Great Britain in the mid-1800s finessed a maritime truce among the Trucial States now, the UAE. The rest is history. Piracy only remained in failed states, especially Somalia, affecting the world.

Fast-forward decades later, Zayed Vision[2] is crafted in 2007 into the Abu Dhabi Policy Agenda 2007–2008 (Executive Council, 2007) and

[1]Some literature on Abu Dhabi include Abed and Hellyer (eds.), 2001, Al Faris (ed.), 2001, Davidson, 2005 and 2009, Oxford Business Group, since 2006, Atef, 2007 and Mann, 2008.

[2]Without an official enunciation of Zayed Vision, it is surmised as his natural proclivity on nature and the environment, but always human resources development as "people-first"; see *UAE Yearbook 2006* for his quotes and thinking on protecting the environment and education as two of his many core passions, http://www.uae-embassy.org/uae/history/sheikh-zayed.

Economic Vision 2030 (Government of Abu Dhabi, 2008). Unlike other cases of economic development, the Abu Dhabi model has already grown superlatively. Beyond megatrends (Naisbitt, 1982), the lingering Arab Spring[3] in 2011, it straddles shifting geoeconomics, geopolitics, globalisation and information communication technology.

To maintain more of the same history of wealth and prosperity, the crux is now between Vision 2030 as planned[4] and implementation. Zayed Vision is given life and substance in Vision 2030 as leadership and oil wealth combined to negate the resource curse.[5] This book explores how the Abu Dhabi story, if started out right, will continue sustainably. The journey is more critical than the destination; reflecting the importance of adapting smartly and continuously to evolving challenges. How well it finishes will be left to be seen and judged by readers.

The literature on economic growth and development is extant with empirical evidence and evidence-based outcomes (Hill, 2002). This book features a narrative style to enable questions and issues to fill some gaps and prompt other scholars, researchers and readers to take a multifaceted approach to portray Abu Dhabi. The narration with anecdotal insights goes beyond consultancy reports, all offering expertise in areas from economic planning to project management.

1.2. Organising Theme and Structure of Book

The book's theme focuses on economic development defined as the mobilisation of land (including natural resources, location and

[3]The proximate neighbourhood is wrecked with socio-economic unrest, starting with the regime change in Tunisia and Egypt as further empirical evidence of political and economic transformation as a double movement by Polanyi (1957) which has its critique (Birchfield, 1999).

[4]Planning no longer involves central planning in command economies, but strategic planning as a tool to organise and mobilise resources for economic development.

[5]The resource curse suggests that countries with finite, natural resources may fail to develop in other sectors or squander wealth, bringing financial problems to future generations.

climate), labour and capital resources to attain a desired sustainable rate of GDP growth as laid out in Vision 2030. Quantitative growth and qualitative development (Rani *et al.*, 2000; Schumpeter *et al.*, 2003; Myint *et al.*, 2009) are necessary and sufficient conditions — or two sides of the same coin.

Abu Dhabi attained rapid economic growth through oil with economic development to be more framed around a sustainable non-oil industrial structure. Vision 2030 centers on a creative innovative knowledge-based economy and society. Socio-cultural changes affect the economic development. Simplistically, GDP growth may be the means to an end as economic development in the first instance, blossoming to social and political development, however defined, suited to Abu Dhabi.

Oil is finite *vis-à-vis* renewable energy as alternatives. The fact that Abu Dhabi is extending sustainably as an energy capital from traditional oil to solar, wind and nuclear renewable energy is not surprising, but prescient. In envisioning its next growth curve, tackling human resources development as its weakest link is more qualitative than quantitative. Upgrading capital and labour efficiencies encompasses building the right overall environment in institutional-capacity and capability premised on equity.

This chapter will examine the *raison d'etre* for a different but positive growth trajectory to 2030 based on the economic development framework. Chapter 2 traces Abu Dhabi's growth from an oil resource-based economy to industrialisation. Chapter 3 follows with knowledge-based services including financial development. Chapter 4 rounds up the remaining enablers in labour, laws and regulation. Chapter 5 reviews, compares and contrasts the Abu Dhabi model with others to share experiences and lessons.

A political economy approach is inevitable with state dominance.[6] Both specific interventions and other tools of *laissez-faire* market capitalism are discerned in a more competitive globalised world. This book explores Abu Dhabi within the UAE to fit into the new multipolar global operating system.

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[6]A group of Arab scholars in 2002 did a report under the United Nations on the Arab world's twin deficits of freedom and knowledge followed by a book on Islamic law and economic development; Kuran, 2010.

Since the global financial crisis (Lim *et al.*, 2010; Steil *et al.*, 2009; Reinhart *et al.*, 2009) in 2008, the fragile recovery in the Organisation for Economic Development (OECD) is juxtaposed with rising emerging economies, Brazil, Russia, India, China and South Africa (BRICS).[7]

1.3. Abu Dhabi in the UAE

Foreign investors and multinational corporations analyse Abu Dhabi in the UAE at a country-level. A brief overview is needed to understand Abu Dhabi's resources, wealth and influence in the UAE context.[8] Abu Dhabi, as the capital city, is the largest of seven emirates in the UAE, comprising Dubai, Sharjah, Ras al Khaimah, Ajman, Umm al Quwain and Fujairah.

As the British prepared in 1968 to withdraw East of Suez by 1971, Sheikh Zayed bin Sultan Al Nahyan led the Trucial States to form the UAE union.[9] The confused prologue had Qatar and Bahrain in earlier negotiations. They opted out, but shaped many compromises in the provisional constitution, parts of which may have been settled differently otherwise, representing an expression of the political *status quo* then.

[7] Goldman's Sach's 2001original BRIC has attracted additions, such as Indonesia and South Africa (BRIICS), as more emerging economies come on board, followed by more frontier economies. The UAE is awaiting an upgrade since 2009 from frontier to emerging by Morgan Stanley Capital International (MCIS) to attract more private equity, meeting most criteria except its 51:49 ownership rule for listed firms.

[8] Abu Dhabi has 87% of UAE land area, majority of population (over 30%) and national income (two-thirds, with 94% of UAE oil reserves and 93% natural gas reserves as over 8% and 3%, respectively, of global reserves). Its per capita GDP in 2009 is over $90,000 for 1.6 million population in mid-2009, of whom 25% are Emirati nationals (Abu Dhabi, Statistics Centre, 2010, pp. 17 and 104). The last Census 2005 has Abu Dhabi's population at 1.3 million, with an annual average growth rate of 2.5% since 2001; nationals account for 27.1% of the total emirate population with a median age of 22 compared to 32 years for expatriates.

[9] Six Trucial States formed the UAE on December 2, 1971. Ras Al Khaimah formally acceded on February 10, 1972.

A small digression without the detailed etymology of tribes and resultant tribal capitalism faced by Sheikh Zayed is pertinent. Tribal groups do exist with modern capitalism, not in a primitive setting. Acknowledgment of the authority of a tribal chief is owed to a common ancestor or territorial affiliation. A social distance is implicit. Yet, all are UAE nationals, united in culture and religion.

UAE federalism is unique in power ceded upward by local governments, not top-down federal and public finance systems as found elsewhere. The constitution manifests unity with virtually all the functions of a unitary state. Federal laws are implemented and enforced by the emirates' own set of state institutions. What is vested to the union and what is preserved by emirate-sovereignty may duplicate with ambivalence.

The constitution lacks clarity on funds to be provided to cover the federal budget. Article 127 states that all emirates contribute a specified proportion of their annual revenue to cover the UAE annual general budget expenditure, but without an explicit formula. Neither has the constitution any jurisdiction over the collection of, or contribution of, funds.[10] Clearly, Abu Dhabi's munificence is its ability-to-pay.[11]

Each emirate has individual economic development plans, strategies and policies.[12] The Ministry of Economy and other related federal bodies knit together over-arching, cross-cutting or across-the-board matters for a whole-of-UAE. National defence or immigration is clearly federal. Education or health is both federal and local.

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[10]In practice, only Abu Dhabi (contributed 91.0% and 91.3% in grants in 2000 and 2005, respectively) and Dubai (flat Dh1.2 billion, 2000–2005) have financed the UAE budget; *UAE Yearbook*, various years, and International Monetary Fund, *UAE Country Report* and *UAE Statistical Appendix*, various years.

[11]Fiscal austerity or consolidation prevails elsewhere. Fiscal space (Heller, 2005) is created by reallocating resources as a return of rationing by some difficult decisions for this sustainable availability of budgetary room. Abu Dhabi simply has more budgetary space than most without as much trade-offs.

[12]A policy in a plan implies both thought and actions as a methodology to achieve a target. It prescribes a strategy as action involving tactics in the detail, procedure and order of how to achieve the desired results particular to the strategy.

The UAE Government Strategy 2011–2013 lays the foundations to celebrate UAE Vision 2021[13] as the 50th anniversary since 1971. Seven general principles, seven strategic priorities and seven strategic enablers are the major focus areas for the government in the seven emirates. It is another matter how various ministries coordinate and work with their local counterparts.

1.4. UNDP Strategic Development Programme Abu Dhabi, 2000–2020

A historical preface to economic planning is the Abu Dhabi Strategic Development Programme 2000–2020 by the 1999 United Nations Development Programme UNDP/DESA Project UAE 96/005.[14] It was never executed, except Dubai which executed a similar UNDP project.[15] Unsurprisingly, despite the hiatus, the UNDP plan for Abu Dhabi has the same elements as Vision 2030 or Zayed Vision in the 21st century.

The UNDP identified issues of a narrow production base, falling GDP per capita, slow productivity[16] improvement, population composition and low employment for national graduates. Generous income distribution in health, education and jobs, other wealth distribution in land, buildings, farms, preferential licenses and shares could be revisited. A macro internal–external financial imbalance in the long-run, if oil revenue stagnates or falls thus disrupting public finance, is unsustainable.

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[13]Enunciated "We want to be among the best countries in the world by 2021" (http://www.vision2021.ae) *inter alia* be united in responsibility, destiny, knowledge and wealth, including a knowledge-based economy (http://uaecabinet.ae/English/UAEStrategy/Pages/UAEGovtStrategy2011-2013.aspx).

[14]It has a three-part main report and detailed sub-reports on individual sectors and 32 projects, including technical reports in supply and use tables (United Nations, 1999).

[15]Dubai's First 2000–2010 Vision was overachieved, followed by the Dubai Strategic Plan 2008–2015.

[16]Productivity is defined as value added per worker or output/labour input. More low-skilled labour in the denominator cannot generate the desired output; high-technology output needs high-skilled input.

Table 1.1. Abu Dhabi vision and stages of development in UNDP plan.

Stages of development	Period	Main features
Starting point	1970s	Oil wealth
I	1975–2000	Oil-based economy, factor-driven
II	2000–2015	Wealth-based with selected investment drive and emphasis on HRD
III	2015–2030 and beyond	Rich economy with selected innovation drive and technology beyond as adaptation/development

Source: 1999 UNDP/DESA Project UAE 96/005.

While the government plays a major role in guiding the private sector, many "missing markets" include a land market and a flexible labour market. Cumbersome business licensing by a multiplicity of authorities is slowly mitigated by inter-governmental agency coordination to promote investment, business or trade. Vision 2030 echoes the UNDP socio-economic concerns of a mindset change in the next generation to propagate innovative growth into the next S-curve.[17]

The main conclusion is that Abu Dhabi needs a long-term vision and development strategy, not more of the same pathway aggravating problems. By stages of development, the UNDP considered the 1975–1995 factor-driven phase to last till 2000 (Table 1.1). With proper planning and private sector support, it could enter a wealth-based economy as investment-driven beginning in 2000–2005 which will remain for another 10–15 years, then entering innovation-driven as an interesting coincidence with Vision 2030.

UNDP Vision 2000–2020 would grow, prosper and diversify Abu Dhabi by broadening its production and income bases. Targets would exceed $35,000 (exceeded in 2005) per capita by 2020 and reduce

[17]The S-curve, a mathematic function applied to technology, depicts an initial slow change followed by a rapid change and then ending in a slow change again when the market is saturated and/or newer technology comes along, forming an S-shaped line when depicted graphically.

oil dependence from 43% to 20% of GDP. The proposed scenario and vision using simple limited economic frames and input–output analytical framework has five options:

I Moderate-high growth and economic stability requires government policy and support to develop hydrocarbon, provide a supplementary cushion to the economy to yield 1.5% real increase or 3% nominal growth per annum of oil and gas component of GDP under the standard path.

II Productivity improvement to tackle population, reduce labour intensity with selective policy intervention in coverage and depth for the main sectors in agriculture, manufacturing, construction, trade, hotels and restaurants, government, other services, and higher labour participation rate of nationals.

III Restructuring and upgrading to build on Option II with changes in a sectoral growth strategy on labour and capital requirement. Two broad orientations are the first based on past sectoral growth strategy mainly relying on real estate and housing, trade, hotels and restaurants, agriculture and finance, and the second on heavy emphasis on manufacturing, electricity and water, trade, hotels and restaurants, transport, storage and communication.

IV Wealth creation proposes a conscious effort to acquire assets which would gain significant value in the long-run, targeting $1 billion yearly for investment in assets to gain $30 billion by 2020 and $50 billion by 2030.

V Rationalise public finance to reduce the government deficit mainly through reduction in labour intensity and target population, as well as greater privatisation and improved efficiency of public services.

Options II and III would produce quite satisfactory results in terms of labour requirement, population size and mix, economic diversification, economic stability (Table 1.2). Combining the two is recommended. Some attention to policy Options IV and V could further enhance financial strength as an important guarantee for sustainability for both Abu Dhabi and the UAE as a whole.

Table 1.2. Comparison of development options and results 2000–2020.

Option/Case	Workers '000 2020	Population '000 2020	Citizens (% of pop)	Citizens (% of workforce)	Trade balance (dh billion)
Standard path	2,054	3,154	21	7	46
I Moderate-high growth	2,064	3,167	21	7	86
II Productivity improvement	1,416	2,325	28	10	63
II Sectoral restructuring	1,171	2,007	33	12	71
IV(B) Sectoral restructuring and high labour participation	1,171	1,965	34	14	71

Source: Table 12.1, Table 3.3 (Main document).

The development scenario includes strategic elements, including higher economic growth, productivity improvement, a proper labour/population policy, enhanced labour force participation rates, economic and financial stability, economic dynamism and private sector development. To date, a population policy remains in-waiting.

Targets include a minimum mean GDP 4.5% per annum (assumed real growth) and a maximum population growth of 2.4% per annum for non-citizens for a total of 2 million in population by 2020. Additional employment and business opportunities for nationals involve 116,000 persons for 2000–2020 or an average of 5,800 per annum and wealth creation of $30 billion by 2020 to $50 billion by 2030 through steady investment in tangible assets. The budget deficit for both Abu Dhabi and the UAE would be erased.

Five priority areas include optimal use of basic resources, consolidation of petrochemical and other viable industries, promotion of investment financing and selected services, regional cooperation, and export development. The supporting framework comprises components in basic economic policies, human resources development and labour force participation rate, private sector development and investment promotion, institutional support, and rationalisation of public finance.

Five basic resources are oil and gas, land and groundwater, strategic geographical location, long coastline, and economic surplus. The planning horizon muddles through oil price volatility, energy, especially gas pricing, new energy and technology, the Gulf and Iraq–Iran war, changing scenarios and unwieldy execution.

For the missing land market, the property law is fitting for Abu Dhabi by 2005. Utilisation and special land uses requires zoning. A coordination and policy-making body will monitor water use, manage demand and balance with corrective measures, and augment with desalination and new water technology.

Abu Dhabi's location as a hub rests on its financial wealth base beside physical infrastructure and logistics. Its long coastline, 200 islands, maritime access and marine resources are utilised in ecotourism. It enjoys location (natural resources in energy), location (land, islands and coastline) and location (strategic to Middle East and North Africa, MENA straddling East and South Asia and European Union EU).

Abu Dhabi's economic surplus estimated at $1.3 billion then, invested in land, buildings and large-sized projects on a build-operate-and-transfer or leasing basis is an enabler. The UNDP notes missing elements in economic consolidation and upgrading, lifestyle shopping and world-class leisure industry, transport network, trade infrastructure and services; much has changed since.

The UNDP checklist includes agricultural modernisation, rationalisation of the public sector's role for economic efficiency and performance with measures to raise productivity, human resources development, health, environment monitoring and control, environment impact assessment for all projects, science and technology base, social development, and quality of life. The same checklist remains in Vision 2030.

Specifically, Abu Dhabi is urged to develop petrochemical and other viable industries, to diversify the dualistic GDP structure of a large 80% dominance of the public sector and remaining 20% of the private sector. The major component in output and investment is for petrochemical and chemical. Again, there is consensus in Vision 2030.

Private small and medium-sized enterprises concentrate on food and beverages, clothing and garments, chemical and construction materials and industrial exports, largely for the regional market. The Khalifa Fund to Support and Develop Small and Medium-sized Enterprises abbreviated to Enterprise Development has a full mandate.

Three important areas in industrial development are petrochemical, basic metals and engineering industries, and capital-intensive, knowledge-based industries. Petrochemical, energy-intensive, capital-intensive industries for local and regional markets need scale economies, industrial infrastructure, and access to technology and market. They face intense competition. Regional cooperation is useful, but the Gulf Cooperation Council[18] (GCC) is fully integrated (Low *et al.*, 2010; Rutledge, 2009; Istaitieh, 2008).

The real need is for a private sector thrust to achieve rapid growth in selective production lines to gain competitiveness. For the petrochemical industry, a two-phased programme first concentrates on natural gas as feedstock (fertiliser, polyethylene and ethylene dichloride complexes). The second phase involves a synergy of production lines using natural gas and naptha. Downstream activity is best left for the private sector.

1.5. Vision 2030 for a Knowledge-Based Economy

Before Vision 2030, the Abu Dhabi government restructuring involved the merger of some departments and new entities created to improve government coordination and efficiency. Some 110 laws and 78 decrees were put together by February 2005.[19]

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[18]The GCC comprises Saudi Arabia, the UAE, Qatar, Kuwait, Bahrain and Oman.

[19]Abu Dhabi Government Restructuring Committee; see Abu Dhabi Government, official websites, http//www.abudhabi.ae, press releases of the Executive Council, various years, for news and statistics.

By end 2008, a strategic plan for government restructuring involves reducing the number of white-collar workers from 65,000 to 18,000, with electronic or e-government in place.

Three contemporary local entities are directly involved in economic development. One is the Executive Affairs Authority tasked to formulate, incubate and implement strategic policy where required, across all government portfolios. It oversees social, technology, economic and political areas, especially matters arising in the most unexpected way which need an urgent response and decision. More detailed analysis and follow-up may be spun-off or in collaboration with other specialised entities.

The second, the Abu Dhabi Council for Economic Development, acts as a policy adviser to the Executive Council or the equivalent Abu Dhabi cabinet. It is tasked to cultivate a dynamic public–private partnership for open communication dialogue between the public sector, local business and Abu Dhabi Chamber of Commerce and Industry in stakeholder networks. It covers energy, infrastructure, banks, insurance, tourism, industry, health care, education, services, transport, and logistics.

The third is a policy-making and regulatory Department of Economic Development.[20] With some ironing out of duplication and clarity of mandate, both the Department of Economic Development and Abu Dhabi Council for Economic Development now have the same chairman (as originally planned in 2006). More inter-agency cooperation seems at work. All departments report to the Executive Council as the ultimate coordinator.

Partial privatisation of parts of Abu Dhabi Inc[21] occurred with initial public offers in food and water companies (Agthia) in 2005 and Arkan Building Materials Company in 2006, all under the

[20]The Department of Economic Development since 2009 was previously the Department of Planning and Economy which was from a merger in 2005 of the Department of Planning and the Department of Economy.

[21]Japan Inc was the pioneer, with government planning, finessing and catalysing industrialisation with its family-owned *zaibatsu*, then *keiretsu*, but has stagnated (Adams *et al.*, 2008). Singapore Inc comprises the public sector and government-linked companies created by sovereign wealth funds. Likewise, Abu Dhabi Inc and Dubai Inc have ownership by state, royal families and sovereign wealth funds blurred.

Government Industrial Corporation, reconstituted as General Holding Company. Fixed at 1-dirham, only Emiratis are entitled in initial public offers for wealth distribution. Widening and deepening the Abu Dhabi stock market to mobilise saving and capital seem secondary as the shareholder culture has yet to take root.

Reinventing or reengineering government is more than a fundamental rethinking and radical redesign, not more of the same to bring about dramatic results and improved performance (Hammer and Champy, 1995). It involves a social contract. Corporate governance applies to the government and Abu Dhabi Inc. Government-knows-best and private-sector-knows-more in public–private partnerships is a knowledge-based economy.

Traditionally characterised by fishing, pearl diving, trading, farming and herding, modern Abu Dhabi economy emerged in 1962 when its first oil cargo was exported. Its factor-driven hydrocarbon wealth buoyed by oil prices has GDP, GDP per capita and high standards of living, safety and security so as to arrive at a wealth-driven stage before the investment-driven in infrastructure.

Vision 2030 for transformation follows Porter's (1980 and 2008) sequential three factor-driven, investment-driven and wealth-driven stages and five-forces of substitutes, rivals and new entrants as threats plus bargaining power of suppliers and customers, underpinned by the role of government and chance as a random factor. It is monetising its wealth in infrastructure-driven with an Asian twist of creative innovation (Fan *et al.*, 2009; Chu *et al.*, 2006; Brown, 2006) in a more competitive globalised world.

Adapting Porter's stages for Abu Dhabi, Fig. 1.1 shows a reversal from a wealth-driven stage already attained from a factor-driven stage to investment-driven, then a fourth twist of innovation-driven or knowledge-driven Vision 2030 to lock-in sustainable growth as its unique model. Infrastructural investment must yield innovation by research and development. It needs research to be more than product development; pure technology innovation more than process model innovation.

Figure 1.2 uses Porter's five-forces to recast into Abu Dhabi's strength-weakness-opportunity-threat as self-explanatory, resonating specific-measurable-attainable-realistic-tangible.

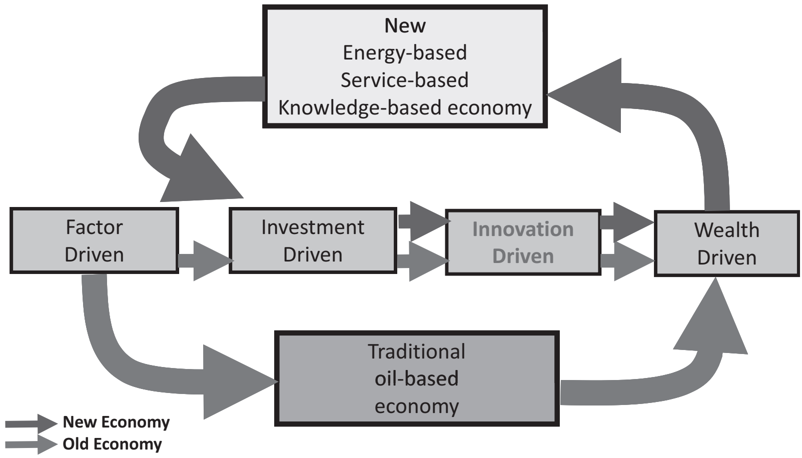

Figure 1.1 Transforming Abu Dhabi into a sustainable new economy by reversing Porter's linear 3-stage into a 4-stage development model.

Source: Jurong International Consulting *et al.*, 2005, Book 1, Diagram 2, p. 27.

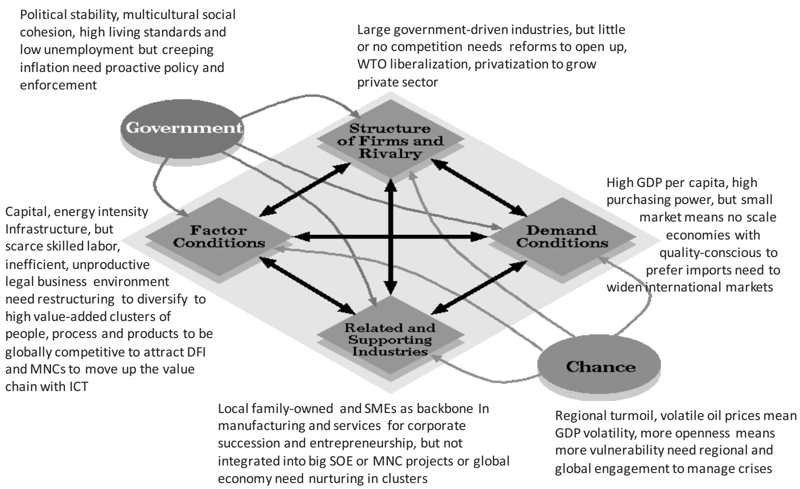

Figure 1.2 SWOT and competitive advantage.

Source: Jurong International Consulting *et al.*, 2005, Book 1, collated from pp. 24–25.

Abu Dhabi's factor-driven comparative advantage is through natural hydrocarbon resources, not labour in a small population where Emiratis are a minority of 20% in their own country. The resultant reliance on unskilled migrant labour may be a cost advantage, but at the risk of national identity, and delay industrial restructuring to more sustainable higher value-added. Mobilisation of labour with changing work culture needs hard policies and quality upgrade for productivity in high-skilled knowledge industries.

A pure resource-based comparative advantage is unsustainable as it is insufficiently dynamic, productive, but vulnerable to volatile world market fluctuations in demand and price. It explains an apparent paradox of Abu Dhabi's drive to achieve non-renewable energy with new energy technology to retain its status as a premier energy capital.

The investment-driven stage had massive investment in infrastructure and industry since Zayed Vision in the 1970s. Abu Dhabi had a five-year plan in 1968–1972, a subsequent three-year plan in 1977–1979 with $612.4 million invested in infrastructure including roads, ports, airports, communication, sewage, electricity and water networks.

The pattern of infrastructural investment reflects the oil boom cycle. Dire basic needs in the 1970s led the GCC, especially Abu Dhabi in the early phases of economic development, to monetise oil gains into infrastructure. By the second oil boom in the 1980s, oil exporting countries' oil revenues exceeded their development requirements, including infrastructure. Having laid the infrastructure backbone, managing facilities competitively is another concern.

The 1980s boom was short-lived, followed by a sharp recession. Crude prices fell to less than $10 per barrel in 1982 which led to government deficits. Belt-tightening prevailed until the mid-1990s, but the cycle is repeated since the 2000s. Vision 2030 seeks to stabilise the gyrations of GDP oil revenue with diversified non-oil GDP, creating new exciting jobs for Emiratis. Neither oil nor middleman-transshipment fits the ambitions of Vision 2030.

Entrepôt trade may suit Dubai as long as its efficient infrastructure and cost advantage are not by-passed by direct trade as other regional ports emerge. Made-in-Abu-Dhabi direct exports from its industrialisation create higher value-added jobs and sustainable skills per Vision 2030. The two economic models effectively complement and supplement to make the UAE globally competitive.

Monetising oil wealth in hard physical infrastructure (investment-driven) is parallel to innovation-driven. Specific innovation policies stress knowledge industries in universities, hospitals, media services and others. Surplus foreign exchange reserves traditionally held in dollar assets are put into new areas, by both geography and industries. It goes further than petrodollar recycling by sovereign wealth funds[22] gearing into commercial strategic, not political acquisitions.[23]

A knowledge-based economy in Vision 2030 is shorthand for using a comparative advantage in natural hydrocarbon resource as the old economy to harness policy-induced artificial competitive advantage related to Porter's five-forces in a micro-environment. An innovation-driven economy is about using intellectual capital as knowledge embodied in skilled labour in an integrated manufacturing-cum-services industrial value chain.[24]

Knowledge industries are capital-intensive, high-technology, embodying superior engineering, artificial intelligence and skills. They can be downstream petroleum or basic steel or integrated aluminium plants and service industries from telecommunication to eco-cultural tourism, construction and utilities in water desalination or nuclear power generation. In adverse terrain and climate, even high-technology biotechnology agriculture has food security reasons given the global food crisis (Evans *et al.*, 2009).

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[22]The Abu Dhabi Investment Authority 1976 is like the Government of Singapore Investment Company, 1981, managing official reserves, while Mubadala Development Company 2002 is like Temasek Holdings Limited 1974 as a sovereign fund for strategic industrial restructuring. There are international repercussions since the global financial crisis; see Saw *et al.*, 2009, for the definition, origins, growth and impact of sovereign wealth, and also Toledeo, 2009; Abdela *et al.*, 2007; Xu *et al.*, 2010, other research includes London-based The Monitor Group (http://www.monitor.com), Las Vegas-based Institute (http://www.swfinstitute.org), and banks like Morgan Stanley, Stanchart and others.

[23]The Abu Dhabi Investment Authority, the world's largest sovereign wealth fund, co-chaired the International Monetary Fund (IMF) 2008 International Working Group, setting out 24 Santiago general accounting principles and practices for greater transparency.

[24]A typical industrial value chain has research and development, product development, process engineering, manufacturing/production, and marketing and distribution as information like wood as raw material is hewn into knowledge as furniture.

Abu Dhabi's small market achieves efficiency in the business environment through smart technology or production techniques despite limited economies of scale (cost per unit decreases as output increases) or economies of scope (greater variety of products). Greater diversification goes with an export-orientation for markets. It demands global competitiveness, in and of itself as requiring technology and skills transfer to augment Abu Dhabi's capital- and energy-intensity as comparative advantages.

After the 9/11 terrorism, in order to avoid the risks of any Western freeze of overseas investment and in pursuit of financial policies designed to steer assets back to domestically, more multibillion-dollar projects are aimed to diversify national income sources. Domestic capital with direct foreign investment is for technology, management and markets. Petrodollar is recycled East to tap into Asian growth and diversity.

Wealth gained through oil alone is not a necessary condition, but a sufficient condition. The government shifting as a regulator to facilitator in a pro-business friendly environment for overall support and ownership of Vision 2030 is a change agent for the sufficient condition. Doubly blessed with wealth and leadership is a rarity in a virtuous circle versus a vicious circle[25] of poverty and corrupt government elsewhere. But throwing money at the problem is not enough; this creates another set of credibility and image issues.

In summary, three emerging industrial cultures are mutually inclusive as productivity, competitiveness and pro-business environment, all as global proactive and differentiated. Vision 2030 is necessary, yet inadequate without full implementation. Quality human resources development and work attitude must match high-technology industries. Population is destiny, especially for a small, open economy[26] to compete globally.

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[25]Virtuous circle is a condition in which a favourable circumstance or result gives rise to another which subsequently supports the first, a vicious means one trouble leads to another that aggravates the first.

[26]Expressed as total merchandise trade to GDP, Abu Dhabi's ratio is about 90% in 2009 (computed from Abu Dhabi, Statistics Centre, 2010, p. 17) compared to 200–300% for Singapore and Hong Kong, including services, as the world's most open city-states.

Successful economic development models as benchmarks include Norway as a comparable oil economy, Ireland and New Zealand as small economies. Baseline 2005 sets the targets. Vision 2030 is defined as a sustainable, diversified, high value-added economy, encouraging enterprises and entrepreneurship,[27] globally well-integrated and leading to better opportunities for all. Mitigating some paradoxes, Abu Dhabi's brand of tribal capitalism could join the OECD league with a difference by 2030.

Vision 2030 has two priorities. One is a sustainable economy and the other involves social and regional development balanced across to Al Ain and Al Gharbia (Government of Abu Dhabi, 2008, p. 17). Seven areas of economic policy and 12 focus industries (*ibid*., 2008, pp. 19 and 113–114) represent an initial wish-list of knowledge-based goods and services.

The 12 sectors in Vision 2030 are energy (other than oil and gas), petrochemicals, metals and mining, aviation, aerospace and defence, pharmaceuticals, biotechnology and life sciences, tourism, healthcare equipment and services, transportation, trade and logistics, education, media, financial services, and telecommunication services. The first seven are globally focused and the last five tap the region.

Five enabling industries are construction and engineering, machinery, electrical equipment, construction materials, and food and beverages. They are defined in various plans and strategy under the Department of Economic Development (Chapter 3) by comparative and competitive analyses, or superceded by faster-moving sovereign wealth funds.

The state picking industries as winners as an industrial policy is justified if market forces as direct foreign investment and multinationals corporations make the ultimate choice. It is not necessarily government protection except for an infant industry justified economically as having potential competitive advantage to graduate by defined timelines. Market forces pick winners; Abu Dhabi Inc facilitates.

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[27] Entrepreneurship is defined as creative destruction by Schumpeter *et al*., 2003; and is defined as someone who actually searches for change, responds to it and exploits change as an opportunity by Peter Drucker, 1985.

Table 1.3. Vision 2030 development targets.

Economic development targets	2005–2007	2015	2020	2030
Real GDP growth %	16.4	7.0	6.0	6.0
Nominal GDP growth %	11.8	9.5	7.5	7.5
Total GDP in real 2005 ($ billion)	77.8	167.0	232.1	415.7
Non-oil GDP in real 2005 ($ billion)	41	50	56	64
Non-oil net exports to real GDP %	–23.6	–10.8	–6.6	0.1
Economic concentration % of real 2005 GDP	37	28	24	20
Human capital development				
GDP output per employee $'000	99	114	123	140
National unemployment rate %	12	7	5	5
National active population %	25	34	41	51
National dependency ratio %	3.6	2.2	1.6	1.1
Workforce tertiary education attainment %	16	22	26	31
GDP per capita real 2005 $'000	55.6	65.6	71.5	82.6
Non-oil GDP per capita real 2005 $'000	22.6	32.6	39.9	53.2
Human development index HDI value	0.89	0.90	0.92	0.93
Physical and financial capital				
National asset formation ($ billion)	55.2	113.8	150.8	275.9
Domestic investment to real GDP %	13	18	18	23
Private saving to total aggregate saving %	40	68	74	86

Source: Abu Dhabi Vision 2030, http//: www.abudhabi.ae.

Implicit is a desire for government ownership of hydrocarbon and land as Emirati birth rights.

Tables 1.3 and 1.4 present Vision 2030 targets in statistics, as best as can be gathered. Unlike other developing countries which need statistical data to obtain capital and finance from investors or the World Bank, the UAE as self-financed, and is a laggard in statistics as noted by the International Monetary Fund (IMF) annual Article 4 consultations.

Quintessentially, economic development by diversification is to reverse GDP contribution of oil and non-oil from pre-Vision

Table 1.4. Urban Planning Council growth projections for Abu Dhabi metropolitan area.

	2007 baseline	2013	2020	2030
Residents	930,000	1.3 million	2.0 million	3.1 million
Annual visitors	1.8 million	3.3 million	4.9 million	7.9 million
Residential units	180,000	251,000	411,000	386,000

Source: Urban Planning Council, http//: www.abudhabi.ae.

2005–2006 of 40% and 60% to 60% and 40% respectively by 2030. This needs GDP compound annual growth rates of 7% for 2008–2019 and 6% from 2020–2030. The global financial crisis has slowed GDP to 4.5% by 2011, but as a foretaste, some accomplishments are iconic (Abu Dhabi Department of Economic Development, 2010 and 2011).

Education and health as two pillars in human resources development partner global brands. New York University and Sorbonne University join other Abu Dhabi-based public and private universities. A diabetes centre is supported by London Imperial College. Cleveland Hospital manages Sheikh Khalifa Medical Centre. Saadiyat cultural hub hosts branches of Guggenheim and Louvre museums. With Etihad Airlines, and the world's first Ferrari theme park, Abu Dhabi joined the 2009 Formula One Championship.

1.6. Statistical Techniques and Tools

Abu Dhabi is as wealthy as any first-world OECD country, but is third-world by underdeveloped and undeveloped statistics.[28] Haphazard, confusing, inconsistent and only nominal GDP until recently by many bodies is without a standard methodology of concepts and principles of the UN System of National Accounts, IMF data dissemination system and OECD standards.

It had no statistical system until 2008. The Statistics Division originally in the Department of Planning was spun-off to an

[28] For availability of statistical time series, see Abu Dhabi, various years, since 1971 to 2006, and 2010.

autonomous Statistics Centre Abu Dhabi. For the statistical needs of Vision 2030, its five-year plan identifies 629 indicators tracked by over 1,700 reports and over 700 published annually by 2014. Six categories comprise economy, industry and business, population and demography, social, labour force, and agriculture and environment.

Statistics Centre Abu Dhabi aims for updated timely data, consistent historical time series and GDP deflators by updating its statistical frames to 2010 for a population census[29] and household expenditure survey (1996/1997). It has service-level agreements with other data-generating agencies for less duplication, more cooperation and sharing of different econometric models for different specific mandates and needs.

It is restructuring GDP accounts[30] and reported over 50% non-oil GDP share in 2010. It implies that Vision 2030's 2015 target is attained *en route* to its 60% mark by 2030. This GDP restructuring follows the UAE Economic Report 2009 by the Ministry of Economy in 2010, where for the first time, oil GDP fell to 29%, non-oil GDP at 71% in 2009 versus 66.5% in 2008. The UAE statistics may reflect successful diversification in Abu Dhabi and/or Dubai's non-oil performance.

The Abu Dhabi Urban Planning Council (2007) and Department of Transport (2006) need population projections too. Department of Finance's fiscal model forecasts revenue and expenditure. The Department of Economic Development's macroeconomic model has satellite computable general equilibrium models for official GDP forecasts and policy simulations. The General Secretariat is as keen on system dynamics modeling to link up various models for scenario planning.

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[29]The 2010 census to coincide with others in the GCC was cancelled, but a pilot survey done by June 2011 would restart a full census by September 2011; *Gulf News* 16 March 2010 and 20 April 2011, and *The National*, 13 June 2011. Questions on details of household members, especially females are culturally sensitive with privacy issues. The federal National Bureau for Statistics switched to administrative data from the Ministry of Interior and National Identity Authority to enumerate without the usual census details. The two methodologies are different, respectively measuring stock and flow.

[30]*Gulf News*, May 30, 2010.